

REMARKS

Reconsideration of the application is respectfully requested in view of the above amendments and the following remarks. Claims 6 and 11 are canceled without prejudice or disclaimer. Claims 1, 3-5, 8, 10, 12-14 and 16 have been amended. Claims 1, 8 and 14 have been amended to address formality issues, as described in further detail below. Claim 8 has been amended to include the limitations of canceled claim 11. The remaining amendments to the claims have been made to further clarify the claim limitations. Claims 17-22 have been withdrawn by Examiner because they are directed to a non-elected invention. No new matter has been added.

§112 Rejections

Claims 1-6 and 8-16 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter. Applicant respectfully traverses this rejection. The claims have been amended to clarify the use of terms "liquid" and "liquid source", and are now definite.

Claims 4, 7, 10-12, and 14-16 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Applicants respectfully traverse this rejection. TMCTs is a liquid source and not a carrier gas in claims 4 and 12. Claim 7 was deleted in previously response, thus rendering this rejection moot as to that claim. Concerning the infrared ray thermostat device, the present specification states at page 7, lines 10-12, "the heating source of thermostat device in this preferred embodiment of present invention can be heating coil or "infrared ray". Applicants submit that this disclosure enables the infrared ray thermostat device.

§102(e)/§103(a) Rejection

Claims 1-4 were rejected under 35 U.S.C. §102(e) or, in the alternative, under 35 U.S.C. §103(a) as being obvious over, Sun (U.S. 6,409,839). Applicants respectfully traverse this rejection.

Sun discloses a vapor generator and connected chemical vapor deposition chamber for providing a vapor for operations such as chemical vapor deposition. The disclosed apparatus has an atomizer for forming an aerosol or droplet spray separate from a vaporization chamber. Sun discloses that the compressed gas source 72 permits introduction of solvents into the nozzle and passageways in the aerosol generator (col. 6, lines 49-50). With this function, the compressed gas source 72 is a "carrier gas provider" not a "purging gas provider". Thus, Sun fails to disclose or suggest "a purging gas provider providing a purging gas to purge from inside the liquid injector liquid from said liquid source," as required by claim 1.

§103(a) Rejection

Claim 4 was rejected under 35 U.S.C. §103(a) as being obvious over Sun (U.S. 6,409,839) in view of Stolmeijer (U.S. 5,874,314). Applicants respectfully traverse this rejection. As discussed above, Sun fails to disclose or suggest "a purging gas provider providing a purging gas to purge from inside the liquid injector liquid from said liquid source that remains inside said liquid injector," as recited in claim 1. Stolmeijer fails to remedy the deficiencies of Sun as it relates to claim 1. Therefore, Sun and Stolmeijer fail to disclose every limitation of claim 4 for at least the reason it is dependent upon an allowable base claim. Applicants do not otherwise concede the correctness of this rejection.

§102(b)/§103(a) Rejection

Claims 1-4, 8-9, and 12 were rejected under 35 U.S.C. §102(b) or, in the alternative, under 35 U.S.C. §103(a) as being obvious over Sturm (U.S. 6,178,925). Applicants respectfully traverse this rejection.

Sturm discloses a vaporizer (12) comprising a vaporizer chamber, which is heated by a heater coupled in heating relationship with the vaporizer element by a heating line (see col. 4, line 60, and lines 65-67 of Sturm).

The "liquid injector" of claims 1 and 8 is not as a "heater" and the "liquid injector" is not heated. Thus, the heated vaporizer disclosed by Sturm is not as a "liquid injector module" as required by claims 1 and 8. Furthermore, Sturm does not disclose or suggest "a liquid injector configured to atomize liquid from the liquid source and inject the atomized liquid," as required

by claims 1 and 8. Still further, Sturm fails to disclose or suggest "a first three-way valve located between said liquid source, said purging gas provider, and said liquid injector, wherein said first three-way valve isolates said liquid source, said purging gas provider, and said liquid injector from a process gas," as required by claims 1 and 8.

Sturm also disclosed a three-way vale coupled at the inlet port of flow path to a pressurized gas feed line that in turn connects to supply line joined to pressurized gas source, e.g., a reservoir of precursor liquid (see col. 5, lines 36-43 of Sturm). Sturm does not disclose or suggest that a "process gas" can be accessed by the three-way valve, as required by claims 1 and 8. In addition, Sturm fails to disclose or suggest a "pressurized gas source" or a "purging gas provider", as required by claims 1 and 8.

Therefore, Sturm fails to disclose or suggest every limitation of claim 1 and 8 and the claims that depend from them.

§103(a) Rejections

Claims 4 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sturm taken in view of Stolmeijer. Applicants respectfully traverse this rejection. As discussed above, Sturm fails to disclose or suggest every limitation of claims 1 and 8 for several reasons. Stolmeijer fails to remedy the deficiencies of Sturm as it relates to claims 1 and 8. Therefore, claims 4 and 12 are allowable for at least the reason they are dependent upon an allowable base claim. Applicants do not otherwise concede the correctness of this rejection.

Claims 1-4 were rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi (JP 2001-250819) in view of Lei (US 2003/0049933) and in further view of Sun and/or Sturm. Applicants respectfully traverse this rejection.

Noguchi discloses a "heater", a "carrier gas", a "liquid material passage", and a "source gas outlet". However, Noguchi fails to disclose or suggest a "process gas", or "a three-way valve located between said liquid source, said purging gas provider, and said liquid injector, wherein said first three-way valve isolates said liquid source, said purging gas provider, and said liquid injector from a process gas located between the liquid injector," as required by claim 1.

Lei also fails to disclose or suggest the process gas and a three-way valve of claim 1. Furthermore, Sun and Sturm fail to remedy the deficiencies of Noguchi and Lei for those at least those reasons provided in the other rejections discussed above. Therefore, Applicants submit that Noguchi, Lei, Sun and Sturm, alone or in combination, fail to disclose or suggest every limitation of claim 1 and the claims that depend from it.

Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi in view of Lei, and in further view of Sun and/or Sturm and further in view of Stolmeijer. Applicants respectfully traverse this rejection. As discussed above, Noguchi, Lei Sun and Sturm, alone or in combination, fail to disclose or suggest every limitation of claim 1. Stolmeijer fails to remedy the deficiencies of Noguchi, Lei Sun and Sturm as they relate to claim 1. Therefore, claim 4 is allowable for at least the reason it is dependent upon an allowable base claim. Applicants do not otherwise concede the correctness of this rejection.

Claims 5, 6, 8, 9, 12 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi in view of Lei and Sun and/or Sturm, and further in view of Yamamuka (U.S. 6,110,283). Applicants respectfully traverse this rejection. Claim 6 has been canceled, rendering this rejection moot as to claim 6.

Yamamuka discloses that a three-way valve connected with a vaporizer and an exhausting branch (vent line). Lei discloses a three-way valve that allows gaseous TDMAT to flow from a gas panel outlet port to a CVD chamber for deposition upon a wafer. However, the disclosures of Lei and Yamamuka in combination with Noguchi or any other reference does not disclose or suggest a liquid injector coupled to a three-way valve in the arrangement set forth in claims 1 and 8.

Furthermore, the arrangement of the second three-way valve of claims 5 and 13 is not disclosed or suggested by the cited references. The second three-way valve of claims 5 and 13 is "connected between said exhausting branch, a gas line, and a delivery line, said gas line located between said liquid injector and said second three-way valve." Lei and Yamamuka provide no disclosure or suggestion of coupling a three-way valve to a liquid injection.

Therefore, Noguchi, Lei, Sun, Sturm, and Yamamuka, alone or in combination, fail to disclose or suggest every limitation of claims 1 and 8 and the claims that depend from them.

Claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi in view of Lei, Sun and/or Sturm, and Yamamuka, and further in view of Stolmeijer. Applicants respectfully traverse this rejection. As discussed above, Noguchi, Lei, Sun, Sturm, and Yamamuka fail to disclose or suggest every limitation of claim 8. Stolmeijer fails to remedy the deficiencies of Noguchi, Lei, Sun, Sturm, and Yamamuka as they relate to claim 8. Therefore, claim 12 is allowable for at least the reason it is dependent upon an allowable base claim. Applicants do not otherwise concede the correctness of this rejection.

Claims 10, 11 and 14-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi in view of Lei, Sun and/or Sturm, Yamamuka, and further in view of Ewing (U.S. 5,553,188). Applicants respectfully traverse this rejection. As mentioned above, claim 11 has been canceled, rendering this rejection moot as to that claim.

Noguchi, Lei, Sun, Sturm, and Yamamuka fail to disclose or suggest three-way valves arrangements as set forth in claims 8 and 14 for at least those reasons discussed above. Ewing discloses the use of a heater in the form of a coil to heat a vaporizer. However, Ewing fails to remedy the deficiencies of Noguchi, Lei, Sun, Sturm, and Yamamuka as they relate to three-way valve arrangements. Therefore, Noguchi, Lei, Sun, Sturm, Yamamuka and Ewing fail to disclose or suggest every limitation of claims 8 and 14, and the claims that depend from them.

Claim 16 was rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi in view of Lei, Sun and/or Sturm, Yamamuka, and Ewing, and further in view of Stolmeijer. Applicants respectfully traverse this rejection. As discussed above, Noguchi, Lei, Sun, Sturm, Yamamuka and Ewing fail to disclose or suggest every limitation of claim 14. Stolmeijer fails to remedy the deficiencies of Noguchi, Lei, Sun, Sturm, Yamamuka and Ewing as they relate to claim 14. Therefore, claim 16 is allowable for at least the reason it is dependent upon an allowable base claim. Applicants do not otherwise concede the correctness of this rejection.

Claims 8-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi in view of Lei, Sun and/or Sturm, Yamamuka, and further in view of Nagashima

(U.S. 5,419,924), Chen (U.S. 6,267,820), and Kanishak (6,086,711). Applicants respectfully traverse this rejection. Claim 11 has been canceled, thus rendering this rejection moot as to that claim.

According to previously analysis, the combination of Noguchi, Lei, Sun, Sturm, and Yamamuka fails to disclose or suggest every limitation of claims 8 and 14, including "a liquid injector configured to atomize liquid from the liquid source and inject the atomized liquid; . . . a first three-way valve located between said liquid source, said purging gas provider, and said liquid injector, wherein said first three-way valve isolates said liquid source, said purging gas provider, and said liquid injector from a process gas; an exhausting branch disposed adjacent said liquid injector, and said exhausting branch exhausting redundant liquid from said liquid source that is purged from the liquid injector by said purging gas." Noguchi, Lei, Sun, Sturm, and Yamamuka also fail to disclose or suggest the specific arrangement of the second three-way valve required by claim 14. Nagashima, Chen and Kanishak fail to remedy the deficiencies of Noguchi, Lei, Sun, Sturm, and Yamamuka. Therefore, claims 8 and 14, and the claims that depend from them are not disclosed or suggested by Noguchi, Lei, Sun, Sturm, Yamamuka, Nagashima, Chen and Kanishak.

Claim 16 was rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi in view of Lei and Sun and/or Sturm, Yamamuka, Nagashima, Chen, and Kanishak, and further in view of Stolmeijer. Applicants respectfully traverse this rejection. As discussed above, Noguchi, Lei, Sun, Sturm, Yamamuka, Nagashima, Chen, and Kanishak fail to disclose or suggest every limitation of claim 14. Stolmeijer fails to remedy the deficiencies of Noguchi, Lei, Sun, Sturm, Yamamuka, Nagashima, Chen, and Kanishak as they relate to claim 14. Therefore, claim 16 is allowable for at least the reason it is dependent on an allowable base claim. Applicants do not otherwise concede the correctness of this rejection.

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Conclusion

In view of the above, Applicants respectfully submit that all pending claims 1-5, 8-10, and 12-16 are in condition for allowance. Reconsideration of the application is requested in the form of a Notice of Allowance. If a phone conference would be helpful in resolving any issues related to this matter, please contact Applicants' attorney, Brian H. Batzli at 612.336.4755

Respectfully submitted,

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